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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,923	07/24/2006	Koji Nitta	050395-0383	8240
20277 7590 04/20/2009 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER ROE, JESSEE RANDALL	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 04/20/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/586,923

## Applicant(s)

NITTA ET AL.

## Examiner

Jessee Roe

## Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-29 is/are pending in the application.
- 4a) Of the above claim(s) 22-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 16 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of the Claims***

Claims 11-29 are pending wherein claims 11 and 16-21 are amended, claims 1-10 are canceled, and claims 22-29 are withdrawn from consideration.

### ***Status of Previous Objections***

The previous objection to the specification for informalities is withdrawn in view of the Applicant's amendment to the Specification.

### ***Status of Previous Rejections***

The previous rejection of claims 11-21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention is withdrawn in view of the Applicant's amendment to claims 11 and 16. The previous rejection of claims 11-13 and 17-18 under 35 U.S.C. 102(b) as being anticipated by Nilsson et al. (US 5,681,783) is withdrawn in view of the Applicant's amendment to claim 11. The previous rejection of claims 11-13 and 16 under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 5,106,674) is withdrawn in view of the Applicant's amendment to claim 11. The previous rejection of claims 15-16 and 20-21 under 35 U.S.C. 103(a) as being unpatentable over Nilsson et al. (US 5,681,783) is withdrawn in view of the Applicant's amendment to claim 11. The previous rejection of claims 14 and 19 under 35 U.S.C. 103(a) as being unpatentable over Nilsson et al. (US 5,681,783) with evidence from

Rota et al. (Micro powder metallurgy for the replacement production of metallic microstructures) is withdrawn in view of the Applicant's amendment to claim 11.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holz et al. (US 2002/0088508).

In regards to claim 11, Holz et al. ('508) discloses an alloy having between about 40% WC/60% W and about 90%WC/10% W [0119] with as little as 5 volume percent carbide or boride and not cobalt, nickel, or iron. The Examiner notes that the composition disclosed by Holz et al. ('508) overlaps the composition of the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed amount of tungsten and carbide from the amounts disclosed by Holz et al. ('508) because Holz et al. ('508) discloses the same utility throughout the disclosed ranges.

In regards to claim 12, Holz et al. ('508) discloses refining to a hardness of between 7 and 20 GPa [0111], which would meet the limitation of "a Vickers hardness of at least 800".

With respect to the recitation "wherein the structure has a density of at least 10 g/cm<sup>3</sup> " of claim 13, Holzl et al. ('508) discloses a substantially similar composition. Therefore, this density would be expected.

In regards to claims 14-15, Holzl et al. ('508) discloses a surface finish (roughness) that would be approximately the size of the grains but not greater than 200 nm (claim 8), which would meet the limitation of a surface roughness of 1  $\mu$ m or less as instantly claimed and overlap the average grain size of 50 nm or less. Alternatively, Holzl et al. ('508) discloses that reducing the grain size provides a greater strength and a hardness increase [0130]. Therefore, it would have been obvious to one of ordinary skill in the art to modify the grain size in order to achieve the desired strength and hardness. MPEP 2144.05 II.

In regards to claims 17-20, Holzl et al. ('508) discloses that the thickness of the layer of alloy would be on the order of 10-1000 nm (1  $\mu$ m) [0108] and massive coatings of about 0.1 mm (100  $\mu$ m).[0109]. Although Holzl et al. ('508) is silent with respect to a convex or concave shape and a width of 1  $\mu$ m to 100  $\mu$ m, merely changing the shape and width of a prior art product would not be sufficient to distinguish from the prior art. MPEP 2144.04 (IV)(A) and 2144.04 (IV)(B).

#### ***Allowable Subject Matter***

Claims 16 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regards to claims 16 and 21, the prior art does not disclose or adequately suggest a structure comprising at least 50 mass percent tungsten and tungsten carbide with the content of carbon in the structure at least 0.1 mass percent wherein the structure has pools at least 5  $\mu\text{m}$  in size consisting of at least one element from the group of cobalt, nickel, and iron wherein the number of pools is not more than one per  $100\text{ mm}^2$  of the surface of the structure.

### ***Response to Arguments***

Applicant's arguments with respect to claims 11-15 and 17-20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571)272-5938. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

JR